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Mthuli Ncube

Chief Economist and Vice President (ECON)
m.ncube@afdb.org
+216 7110 2062

Charles Leyeka Lufumpa

Director
Statistics Department (ESTA)
c.lufumpa@afdb.org
+216 7110 2175

Victor Murinde

Director
African Development Institute
v.murinde@afdb.org
+216 7110 2075

Désiré Vencatachellum

Director
Development Research Department (EDRE)
d.vencatachellum@afdb.org
+216 7110 2076

Managing commodity price volatility in Africa

Thouraya Triki and Youssef Affes*

- Africa's exposure to different commodity classes require differentiated strategies to address the problem of commodity price volatility. The "one-size-fits-all" approach should be avoided. More attention should also be given to the problem of speculation and to non-oil commodities.
- Management of commodity price volatility should not be restricted to a single strategy in order to fully benefit from all available options while reducing their limitations to a minimum.
- Interventions should not be limited to the supply side but also cover the demand side: capacity building and technical assistance are as important as the development of derivatives markets.

I Introduction

The fate of a number of African economies is closely linked to that of commodity markets. For instance, Collier (2007) estimates that commodity boom in 2005 and 2006 added 2.5% to the growth of a typical African economy. Over the last decade, commodity prices, and volatility, have increased (Figure 1), reflecting mainly:

- *Economic cycles:* Commodity prices fluctuations are driven by the actual or expected performance of major economies, notably BRIC countries. Related to that are exchange rate fluctuations which play a role as major commodity markets denominate prices in USD or Euro.
- *Speculation:* Interest that investors have been taking in dealing with commodities and commodity derivatives have mattered.¹ Speculators are likely to have accelerated and amplified the number and magnitude of price swings that are not related to market fundamentals.

- *Supply shocks:* affect prices or production levels. Recent political events in Côte d'Ivoire, which produces 40 percent of world raw cocoa, caused the price of cocoa to mark new record highs while current political turmoil in Libya put upward pressure on oil prices.
- *Shift to Just-in-time inventory management,* led demand changes to result in price fluctuations rather than inventory changes.

Price volatility affects macroeconomic stability and economic planning. Therefore, the cost of not managing, or poor management of, price volatility is high. For instance, losses in Malawi's oil stabilization fund reached 1.5 percent of gross domestic product by 2008 (Kojima, 2009). This brief aims at discussing strategies available for African countries to manage commodity price volatility. Africa's exposure to commodities, and major barriers impeding the continent capacity to cope with commodities price risk, will be discussed as well.

* Thouraya Triki is a Principal Research Economist at the African Development Bank and Youssef Affes is Managing Director at Spot Global Trading.

¹ The Bank for International Settlement (2010) reports that the gross market value of commodity derivatives contracts increased from USD 177 billion at end June 2004 to USD 492 billion at June-end 2010. A 2010 survey conducted by Reuters shows that speculation on oil prices increased prices by USD 10 to USD 30 a barrel, thus costing consumers at least 300 billion a year.

II Africa's exposure to major commodities

Table 1 classifies commodities and provides a list of African countries that are highly dependent on commodities exports. Table 2 provides a simplified commodity current account for Africa in 2008 and 2009. With the exception of few commodities like Cocoa, sugar and gold, most commodities experienced a steep price increase in 2008 that was followed by a sharp decrease in 2009. Higher prices in 2008 affected the African current account in a positive way as key commodities exports exceeded key commodities imports by USD 319 billion; compared to USD 192 billion in 2008. Nevertheless, the impact is highly dependent on the type of commodity.

Africa is a net importer of grains and oilseeds (Table 2). The 2008 increase in the price of these commodities translated into an additional USD 8 billion in their food bill compared to 2009 levels. This happened in spite of lower imported volumes. For example, Nigeria reduced its imports from 13 million tons in 2006 to less than 3 million in 2008 as a consequence of a threefold increase in wheat prices. Conversely, Africa is a net exporter of soft commodities, as well as mineral and metal commodities, with the notable exception of sugar. Movements in market prices of key soft commodities between 2008 and 2009, led to a USD 848 million decrease in exports (mainly driven by decreasing coffee and cotton prices) and a USD 108 million increase in imports (driven by increasing sugar and cocoa prices). Similarly, decreasing prices of key mineral and metal commodities translated into a net loss of almost USD 2 billion for Africa.

Africa is also a net exporter of energy commodities. Decreasing prices in 2009

reduced the African energy import bill by USD 370 million and African oil exports by USD 133 billion. However, while the increase in imports benefited a large number of African countries, decrease in energy exports was absorbed mainly by few countries namely Nigeria, Algeria, Angola and Libya.

III Who bears the economic cost of commodity price volatility?

Commodity imports

State-controlled institutions have monopoly on imports of key agricultural commodities in most African countries. These institutions mainly deal on the cash market and manage price risk only by timing their tenders and managing their inventories. Being very passive in managing price risk, government institutions have been facing increasing deficits thus creating a burden for government budgets. Several African countries liberalized trade on selected commodities, including agricultural ones. For instance, the *office des cereales* in Tunisia privatized trade of corn and soybean. Conversely, private players are increasingly trying to lock in prices by buying derivatives. Yet, important variations exist across Africa. While animal feed producers in Algeria and Tunisia are actively

covering their price exposure, the cotton company of Zimbabwe does not seem to use derivatives to manage commodity price risk.²

The procurement of energy inputs is often controlled by government agencies as well. In the absence of hedging, new purchases are exposed to higher prices on the spot market. With notable exceptions like Ghana, which put in place a commodity price risk management policy in 2010, most African countries do not actively manage price risk. Similarly, for most airlines in Africa, "the concept of risk management is not known or understood" (AFAA, 2006). Likewise, importers of metal and mineral commodities do not seem to be actively involved in managing price risk. For instance, metal importers in Tunisia, including the state-owned Fouledh, which controls 50% of the market do not hedge.

Commodity exports

State marketing boards act as a monopoly for exports of agricultural commodities paying producers fixed prices but on-selling at international prices. Thus marketing boards bear the upside and downside risk. However, the downside risk remains small since fixed price paid to producers is often significantly low compared to international prices. Few African exporting countries are

Box 1 Derivatives in action

Cocobod has been successful in using derivatives to stabilize cocoa revenues, Armah (2008) shows that futures-hedging is value adding for major cocoa exporters in West Africa, but that full hedging is not optimal given transaction costs. KNCU was assisted by the International Task Force on Commodity Risk Management to hedge its 2000-2002 crop by buying options. This allowed it to maintain guaranteed minimum prices to farmers. Unfortunately, KNCU ceased hedging activities in the following years following changes in management and their expectations that coffee prices will not fall (Rutten and Youssef, 2007).

In South Africa, Minnitt et al. (2007) estimate total benefits from hedging to the gold mining industry between 1986 and 2006 at Rand 2.9 billion. Governments like Zambia (for copper) and Zimbabwe (for nickel) have been also using commodity exchanges to hedge their exports (UNCTAD, 1998).

² According to the 2008 annual report of the cotton company of Zimbabwe, the company only hedges currency price risk. No reference is made to hedging commodity price risk.

still using marketing boards and some of these boards, notably Cocobod, have been successful in hedging their exposure.

Since the abolition of marketing boards, cooperatives, such as the Kilimanjaro Native Co-operative Union (KNCU) in Tanzania have been also increasingly involved in export markets (Afeikhena and Olawale, 2000). Cooperatives may guarantee minimum price to farmers which will expose them to downside risk. Most cooperatives are not actively hedging their price risk despite successful experiences (Box 1).

For energy commodities, notably oil, most export activities are jointly overseen by National Oil Companies (NOCs) and private oil companies. The degree of NOCs' exposure depends on the contract with their private partners and production levels. For example, the standard contract in Algeria is a production sharing agreement where the government retains 51% sharing, while the government of Cameroon retains only 20 percent participation through its NOC. Whether private companies, who partner with NOCs, should hedge or not is an ongoing debate. While a company like Exxon Mobil doesn't hedge, Shell hedges its entire production. Variations exist also across African NOCs. Sonatrach (Algeria), Sasol (South Africa) and Sonangol (Angola) have been actively managing oil price risk through options, swaps and structured oil backed financing. Yet, smaller NOCs are less active in hedging price risk.

The market for mineral and metal commodities seems to be less predominant by governments. Many junior mining companies often do not hedge as one of their key selling points is that investors hold their shares to gain exposure to commodity price fluctuations. Conversely, larger players do limited or full hedging.

IV Managing commodity price volatility

Commodity price risk could be managed by altering demand and supply, or by using ex-post or ex-ante smoothing instruments such as commodity derivatives and stabilization funds. Alternatively, vulnerability to volatility of commodity prices could be reduced through diversifying and rationalizing strategies. For instance, several African initiatives were put in place to reduce dependence on oil (Box 2).

Commodity Derivatives

Commodity derivatives seek to reduce potential losses from adverse movements in commodity prices through market-based instruments. There are two types of

markets. In Africa, OTC markets seem to be mainly accessible to large corporations and cooperatives. International commodity derivatives markets such as the Chicago Board of trade (CBOT), the New York Mercantile Exchange (NYMEX) and the London Metal Exchange (LME) trade most of commodities that are relevant for Africa and African producers and importers have been using them to hedge their price risk.

Unlike exchanges that have been introduced in Asia and Latin America in the 1990s, African markets that offer commodity derivatives, with the exception of the South Africa-based SAFEX, have been unable to attract significant trading volumes, and their role, in most cases, have been limited to providing price information and standardized regulation. SAFEX, a division of the JSE is

Box 2 Selected initiatives to rationalize and diversify oil consumption

In order to reduce its oil consumption, Egypt is accelerating shifting from gasoline and diesel to natural gas in the transport sector. Morocco launched in 2008 a new energy strategy that seeks to increase the efficiency of its public sector use of energy, including street lighting and public buildings. Egypt also established a USD 1 billion energy development fund and targets to reach 20 percent of renewable energy generation by 2020.

Tunisia has been a pioneer in Africa to rationalize its energy consumption by establishing a National Agency for Energy Conservation in 1985. This agency was mandated to reduce energy intensity by 3 % annually.

The government of Rwanda distributed 800,000 compact fluorescent lamps (CFL) between 2007 and 2010, out of which 50,000 were distributed for free and the remainder at a subsidized price to match the price of incandescent light bulbs. Ghana also distributed 6 million CFLs in 2007 for free as an attempt to address repeating serious power outages the country faced. Ghana introduced in 2008 a refrigerator efficiency rebate scheme as well.

Source: Kojima (2009).

derivative securities. A first type (futures and forwards) leads to predefined payments. The second type (call and put options) gives the holder flexibility to buy or sell, thus translating into flexible flows that depend on market movements. Producers and buyers could hedge by directly being active on derivatives exchanges, through intermediaries like trading houses or brokers, or through OTC

Africa's most important commodity derivatives market. The number of contracts traded on the JSE in 2010 increased year on year by 12 percent to stand at 2.1 million. White maize, wheat and yellow maize accounted for 46, 27 and 16 percent, respectively, of all grains traded on the Commodity Derivatives market. Futures are more frequently traded than options and

over 92 of open interest positions for January 2011 were held by local clients. Additional markets offering Commodity derivatives are available in Kenya (African Mercantile Exchange), and Mauritius (the Global Board Of Trade Ltd (GBOT). Bourse Africa in Botswana aims at becoming a regional hub but did not start trading yet.

Market stabilization schemes

During the 70's and 80's, interventionist policies were championed through the implementation of International Commodity Agreements (ICAs), including the international cocoa agreement (ICCA) and the international coffee agreement (ICOA). These agreements aimed at stabilizing commodity prices through market interventions, either by using buffer stocks, export control, or a combination of both instruments. While a buffer stock strategy looks simple at first glance, its implementation raises challenges related to the choice of the market and reference price, the frequency of price update to trigger interventions and the need for a consensus on the revised price. Furthermore, it could be challenging to sustain market interventions over a long period.

ICAs failed to achieve sustainable price stability mainly because of poor initial financing, disagreements between exporting and importing countries on price levels and allocation of quotas among exporting countries, as well as persistent commodity shocks (South centre, 2004). African participating countries were no longer interested in sustaining ICAs. For instance, Cote d'Ivoire, the largest cocoa exporter, refused to join the 1980 and 1986 international cocoa agreements (South Centre, 2004). Following the same strategy, several African governments had developed domestic stabilization policies. The outcomes from such policies are mixed. While Cote d'Ivoire "Cocoa War" in 1987 led

to serious economic problems for the country, Ghana seems to be quite successful with Cocobod.

Ex-post revenue smoothing funds

Several African countries have implemented stabilization funds or stabilization accounts to smooth ex-post commodity-based revenues. Such strategies are mainly adapted for exporting countries. They do not target commodity market prices but only seek to smooth revenues and accordingly consumption. However, the long lived nature of commodity shocks makes holding consumption and investment constant through stabilization funds likely to fail, especially when funds are poorly endowed and small (Deaton and Miller, 1995). This applies to African stabilization funds. Out of 15 SWFs in Africa, 8 have explicit stabilization mandates (Triki and Faye, 2011). With the notable exception of Algeria, most African stabilization funds are small (Table 3). The implementation of stabilization funds poses also challenges in terms of setting up the rules that will trigger the transfer to and from the stabilization fund, defining the reference price, managing accumulated resources, and ensuring proper governance structures. Most African stabilization funds suffer from poor design and governance (Triki and Faye, 2011).

Reserves accumulated in stabilization funds have been used to close budget deficits and repay debt. For instance, Sudan almost exhausted its Oil Revenue Stabilization Fund to meet increased expenditure commitments and address reduction in aid flows (Medani, 2010). Similarly, while Nigeria ECA was instrumental to absorb negative effects of commodity prices swings over the period 2008-2010, its balance is projected to decrease from USD 20 billion in 2008 to less than USD 3 billion in 2010. Thus, African stabilization funds have very

limited resources and can only be effective to address short lived price shocks.

V Constraints to managing commodity price volatility

Managing risk is risky! The following identifies main reasons why African producers and buyers have been lagging behind when it comes to addressing the problem of commodity price volatility.

Small Size

Most agricultural commodities in Africa are produced by small-scale farmers who have limited financial resources to access exchanges and even less to manage price risk. This contrasts with practices in developed countries. For example, 90 percent of farmers in the US sell their products on the Chicago Board of Trade. The problem of size affects also the extent of derivative market development. Indeed, the existence of a thriving spot market is necessary for the success of a derivatives exchange. With the notable exception of Nigeria, South Africa and few North African countries, commodity markets in Africa are small and highly informal (UNCTAD, 2005) which impedes the development of liquid spot markets and consequently derivatives markets.

Lack of capacity

The complex nature of commodity risk management instruments requires a certain level of financial literacy. Users need to select risk management instruments and design a strategy. This could be challenging especially for small producers/buyers. Often, African potential users do not understand how markets work, the advantages of managing risk, and how risk can be mitigated. This is particularly true for government bodies and small private users

and producers of commodities. Capacity building is needed to help African producers and buyers understand the full range of instruments available to manage commodity price risk. Capacity building should also cover financial institutions and intermediaries who are likely to sell these products as well as supervisory authorities that will oversee risk management activities.

Inappropriate market structure

African commodity markets lack both physical and soft infrastructure. Soft infrastructure includes transaction facilitators, information analyzers, credibility enhancers, and regulators. Given lack of market research, commodity producers and buyers face difficulties to set up prices (spot and future), define the quantity they should buy or sell and identify which markets offer best options for trading. Furthermore, traded commodities on African markets are often not graded. This restricts African producers' access to international markets.

Physical infrastructure is key for the success of a commodity exchange as well, especially warehouses where physical transactions should take place. Transportation and distribution are essential so that delivery location can be credibly specified in the contract. Moreover, physical / communication networks provide traders with spot market information which is very useful to estimate the basis. The efficiency of the physical infrastructure and moving products around different geographical positions in different time frames is directly related to the basis and therefore the competitiveness of using an exchange.

Regulatory barriers

Control on foreign exchange in several African countries makes it impossible for domestic buyers and sellers to hedge on international markets. Some African countries which liberalized their capital account do not authorize foreign investments for hedging purposes. In order to overcome these restrictions, importers in countries like Tunisia hedge their price risk through their commodity suppliers. While such practice reduces their exposure to price risk, it prevents them from adjusting their hedging positions to price movements, or to use options. International providers of risk mitigation instruments are also facing increasing pressure to fulfill the Know Your Client requirements. This led to an increasing reluctance to deal with African clients. For instance, ARFAA (2006) concludes that most African airlines are unable to access fuel hedging instruments because of providers' excessive risk aversion.

VI Conclusion

While progress has been made in managing price risk, mainly at the level of large companies-both private and state owned- serious gaps remain. These gaps could hinder Africa's quest for sustained growth. This brief argues that African countries should not restrict their management of commodity price risk to a single policy but rather seek a combination of options to insulate their economies from price risk.

African countries should also seek to encourage hedging through derivatives.

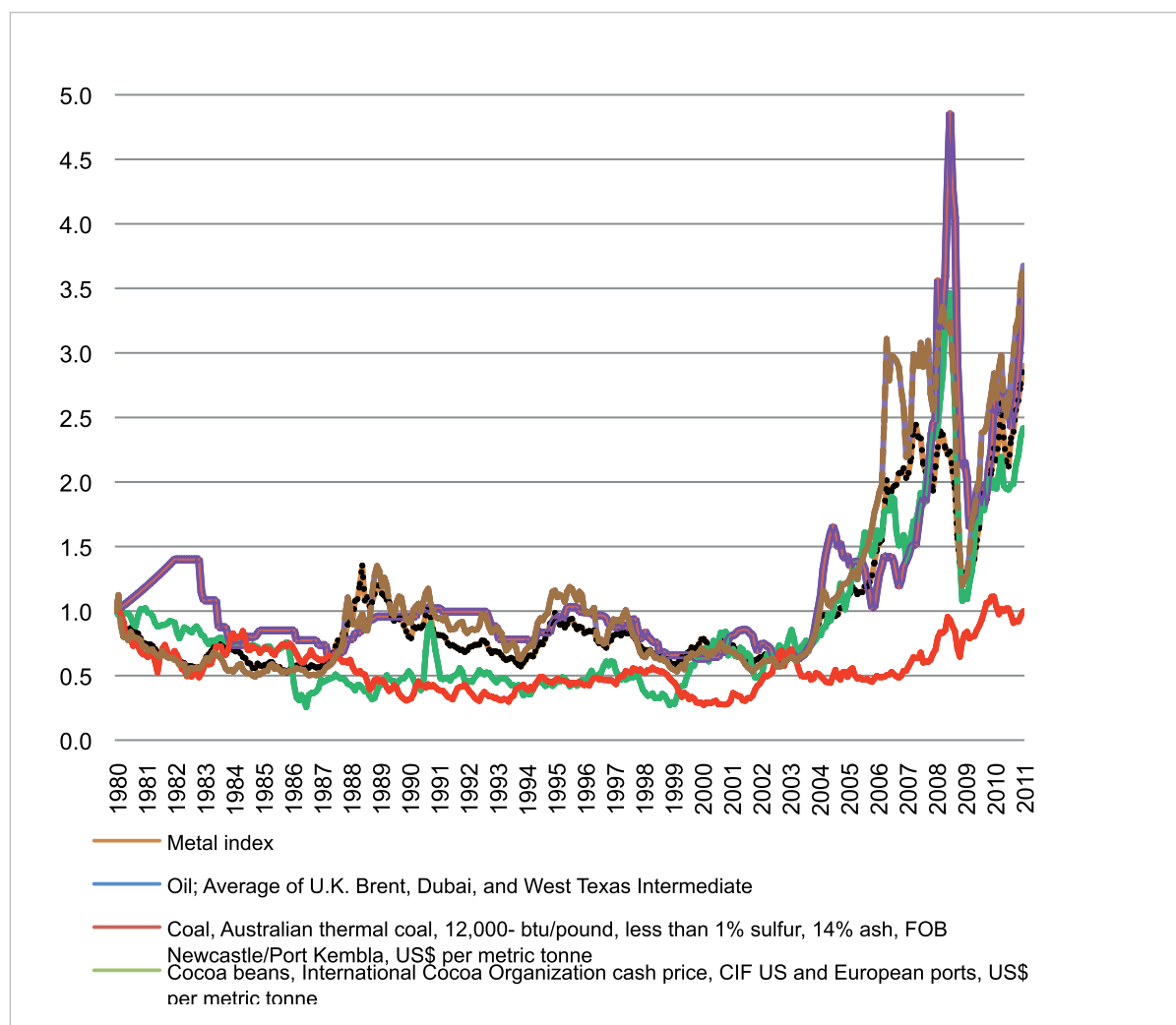
This requires (i) capacity building for all market participants, and (ii) the political will to create the right environment in which an African exchange, or a bridge to an international exchange can work. African countries should not try to replicate contracts available on international markets but rather develop market niches that are adapted for the realities of African commodities. Given the small size of most commodity markets in Africa, it could be optimal to develop regional markets in harmonized clusters by leveraging on progress made on regional integration. Moreover, governments of involved countries should offer incentives to state-institutions to hedge and channel, at least partly, their hedging operations to these regional markets to boost volume. The success of a regional market will need some pre-requisites like harmonizing trade and exchange rate policies, setting up agreeable rules of grades and standards, and implementing proper contract enforcement mechanisms.

African countries should also adopt complementary risk management strategies. Long term purchase agreements between commodity producers and users in different African countries like oil producers and aluminum producers could also be used to manage price volatility.

Last but not least, Africa should support initiatives aimed at reducing speculation on key commodities markets, including margin limits (by commodity and in aggregate). While healthy speculation could have positive effects on commodity markets, it needs to be closely managed.

annexes

Figure 1 Selected commodity indices (1980-2011)



Source: Authors' calculation using IMF data.

Table 1 Classification of commodities

Commodity category	Commodity sub-categories	Countries with a share of exports from commodity superior to 20% (2009 data)
Agricultural	Grains and oilseeds – corn, wheat, soybeans, soymeal, soyoil, oat and rice Soft commodities- sugar, cocoa, coffee and cotton	Benin, Burundi, Burkina Faso, Cameroun, Cote d'Ivoire, Ethiopia, Ghana, Mali, Rwanda, Sao Tome and Principe, Swaziland, Togo, Uganda.
Energy	Crude oil Ethanol Natural gas Coal	Equatorial Guinea, Angola, Nigeria, Chad, Libya, DRC, Sudan, Algeria, Gabon, Cameroon, Egypt, Somalia,
Minerals and metals	Precious: gold, silver, platinum, palladium Base: copper Ferrous: steel Other: uranium	Zambia, Burkina Faso, Namibia, Mali, DRC,

Source: Authors' calculation, data is from AfDB Statistics Department; COMTRADE Database and UN statistics Division.

Table 2 Africa's simplified commodity current account (2008-2009)

In Billion, USD	Year 2008		Year 2009	
	IMPORT	EXPORT	IMPORT	EXPORT
<i>Grains and oilseeds</i>				
Corn	2.65	0.41	2.27	0.53
Wheat	10.60	0.11	7.05	0.14
Soybeans	0.76	0.02	0.82	0.01
Soybean oil/byproducts	3.06	0.13	2.22	0.12
Palm oil	2.83	0.22	2.13	0.18
Rice	13.30	0.86	10.58	0.88
Total grains and oilseeds	33.20	1.76	25.08	1.87
<i>Soft commodities</i>				
Sugar, prep. Honey	3.27	1.44	3.67	1.38
Cocoa	0.16	7.75	0.21	7.75
Coffee and substitute	0.66	1.90	0.45	1.72
Cotton	0.38	1.59	0.25	0.97
Total Soft commodities	4.48	12.68	4.59	11.83
<i>Metals and Minerals</i>				
Copper	2.32	4.94	1.71	3.72
Gold, non monetary	5.17	7.31	1.30	7.65
Ores and conc. of Uranium	0.00	0.25	0.00	0.28
Platinum and other met. Plat	0.01	14.27	0.06	8.78
silver, unwrought, unworked	0.02	0.08	0.01	0.03
Total Metals	7.53	26.84	3.08	20.45
<i>Energy</i>				
Gas, natural and manuf.	3.02	38.99	2.15	33.35
Petrol.oils, crude and c.o	8.36	295.04	8.86	167.77
Total Energy	11.38	334.03	11.02	201.13
Total Commodities	56.59	375.30	43.76	235.27
Total Trade	437.53	585.14	368.46	382.52

Source: Authors' estimates, data is from AfDB statistics department; COMTRADE Database and UN statistics division.

Table 3 Selected stabilization funds in Africa

Fund name	Country	Date of establishment	Most recent estimate of Assets under management (US\$bn)	Year
Fond de Régulation des Recettes	Algeria	2000	59.34	2009
Fonds de Stabilisation des Recettes Budgétaires	Chad	2006	0.003	2010
Reserve Fund for Oil	Angola	2004	0.2	2008
Fonds de Stabilisation des Recettes Budgétaires	Congo	Unknown	1.64	2010
Fonds de Stabilisation des Recettes Budgétaires	Equatorial Guinea	Unknown	1.39	2010
Fonds National des Revenus des Hydrocarbures	Mauritania	2006	0.034	2009
Excess Crude Fund (Account)	Nigeria	2004	3	2010
Oil Revenue Stabilization Fund	Sudan	2002	0.15	2009

Source: Triki and Faye (2011).

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